AFF/CIFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Sommers et.al.

Serial No.: 09/682,516 Group Art Unit: 2875

Filed: September 13, 2001 Examiner: Hargobind S. Sawhney

For: **OPTICAL WAVE GUIDE**

Attorney Docket No.: GD26-GD28
GLOZ 2 00078

MAIL STOP: Appeals
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF BRIEF OF APPELLANTS

Dear Sir:

In connection with the above-entitled case, please charge our deposit account No. 06-0308 for payment of Patent and Trademark Office fees in the amount and for the purpose below indicated:

Filing a Brief in Support of an Appeal (in triplicate)	**$500.00**

The Commissioner is hereby authorized to charge all fees which may be required or credit any overpayment to Deposit Account No. 06-0308.

Respectfully submitted,

FAY, SHARPE, FAGAN,
MINNICH & MCKEE, LLP

Scott A. McCollister
Reg. No. 33,961
1100 Superior Avenue, Seventh Floor
Cleveland, Ohio 44114-2518
(216) 861-5582

N:\GLOZ\200078\GLOZ 2 00078 Appeal Brief Transmittal.doc

CERTIFICATE OF MAILING

I hereby certify that this **TRANSMITTAL OF BRIEF OF APPELLANT** is being deposited, in triplicate, with the United States Postal Service as first class mail in an envelope addressed to: MAIL STOP Appeals, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on May 2, 2005.

By: Christie L. Cermak
Christie L. Cermak

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of Sommers et al.

Application No.: 09/682,516

Examiner: Hargobind S. Sawhney

Filed: September 13, 2001

Docket No.: GD26-GD28
GLOZ 2 00078

For: **OPTICAL WAVE GUIDE**

BRIEF ON APPEAL

Appeal from Group 2875

FAY, SHARPE, FAGAN, MINNICH & MCKEE, LLP
1100 Superior Avenue – Seventh Floor
Cleveland, Ohio 44114-2579
Telephone: (216) 861-5582
Attorneys for Appellants

TABLE OF CONTENTS

I. REAL PARTY IN INTEREST

The real party in interest for this appeal and the present application is GELcore, LLC, by way of an Assignment recorded in the U.S. Patent and Trademark Office at Reel 013370, Frame 0449.

II. STATEMENT OF RELATED APPEALS AND INTERFERENCES

There are no prior or pending appeals, interferences or judicial proceedings, known to Appellant, Appellant's representative, or the Assignee, that may be related to, or which will directly affect or be directly affected by or have a bearing upon the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-9, 11-14, 16-19 were finally rejected on November 30, 2004.
Claims 1-9, 12-14, 16-19 are on appeal.
Claims 10-11 and 15 are canceled.
A correct copy of claims appears in the Appendix attached hereto.

IV. STATUS OF AMENDMENTS

No Amendment After Final Rejection has been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 is directed to a lighting apparatus which includes a wave guide having a substantially planar light emitting face and a curved surface disposed within the wave guide. (FIG. 2). Discrete microstructures are arranged on the curved surface to interact with light, which travels in the wave guide, to scatter at least a portion of the light out of the wave guide in a pattern. (Para. 32, 35). The pattern is determined by a prespecified arrangement of the microstructures. (Para. 35, 36). A plurality of light emitting diodes is disposed surroundingly at the wave guide periphery and is coupled to the wave guide to inject light into the wave guide. (Para. 30). The plurality of light emitting diodes includes a first sub-set of light emitting diodes emitting light having a first color, and a second sub-set of light emitting

diodes emitting light having a second color that mixes with the first color in the wave guide to produce a third color. (Para. 41). An encapsulant, which abuts the wave guide, surrounds the plurality of light emitting diodes. The encapsulant matches a refractive index of the wave guide. (Para. 30).

Claim 12 is directed to an optical wave guide for use in conjunction with a light source. The optical wave guide comprises a translucent material formed into a shape having a top surface, an arcuate bottom surface, and at least one side surface in optical communication with the light source. (Para. 30, FIG. 2). A plurality of microstructures is disposed selectively about the bottom surface and cooperates with the bottom surface to scatter at least a portion of light injected from the light source. (Para. 35). The scattered light exits the wave guide through the top surface such that the scattered light forms a pre-selected light output pattern viewable outside the wave guide. (Para. 35, 36).

Claim 16 is directed to a lighting apparatus including a light emissive wave guide. The wave guide includes a substantially planar light emissive face, and a curved textured bottom surface. (FIG. 2). The light emissive wave guide defines a center and a perimeter with a thickness of the light emissive wave guide at the perimeter being greater than a thickness of the light emissive wave guide at the center. (FIG. 2). An optical cladding is disposed within the wave guide, oppositely to the curved textured bottom surface. (Para. 34). A plurality of light producing elements is arranged around the perimeter of the light emissive wave guide. (Para. 30).. The light producing elements produce the light substantially along an axis orthogonally disposed relative to the light emissive wave guide. (Para. 33). The light interacting with the textured surface is emitted from the light emissive face. (Para. 33).

Claim 17 is directed to a lighting apparatus comprising a light emissive wave guide including a textured surface. (FIG. 2). A plurality of light producing elements is arranged about a periphery of the light emissive wave guide to produce light which interacts with the textured surface and is emitted by the light emissive wave guide. (Para. 32). An encapsulant, which abuts the light emissive wave guide, surrounds

the plurality of light producing elements and has a refractive index which matches the index of the light emissive wave guide. (Para. 30).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are presented for review:

ISSUE 1. Whether **Claim 1 and dependent Claims 2-3, 5, 7 and 9** are properly rejected under 35 U.S.C. §103(a) as being obvious over Tung (U.S. Patent No. 5,842,297) in view of Tokunaga (U.S. Patent No. 5,375,043) and Tarne (U.S. Patent No. 6,443,582).

ISSUE 2. Whether **Claim 12 and dependent Claim 13** are properly rejected under 35 U.S.C. §103(a) as being obvious over Gwo-Juh (U.S. Patent No. 6,164,791) in view of Kuwabara (U.S. Patent No. 6,508,564).

ISSUE 3. Whether **Claim 16 and dependent Claims 18 and 19** are properly rejected under 35 U.S.C. §103(a) as being obvious over Tarne (U.S. Patent No. 6,443,582) in view of Lea (U.S. Patent Application Pub. No. US 20010038539).

ISSUE 4. Whether **Claim 17** is properly rejected under 35 U.S.C. §103(a) as being obvious over Tokunaga (U.S. Patent No. 5,375,043).

VII. GROUPING OF CLAIMS

Claims 1-9, 12-14, and 16-19 do not stand or fall together. First, each of issues 1-4 are directed to different claim sets which must be assessed individually. Second, independent claims 1, 12, 16 and 17 are distinct for the reasons articulated in greater detail below.

VIII. ARGUMENT

Issue 1

Claims 1-3, 5, 7 and 9 are rejected under 35 U.S.C. §103(a) as being obvious over Tung in view of Tokunaga and Tarne.

The Examiner relies on Tung to teach a lighting apparatus which includes a wave guide having a substantially planar light emitting face and a surface which bears discrete microstructures which interact with light in the wave guide to scatter at least a portion of the light out of the wave guide in a pattern. The pattern being

determined by a prespecified arrangement of the microstructures. A plurality of light emitting diodes is coupled to one edge of the wave guide and injects light into the wave guide.

The Examiner relies on Tokunaga to teach the LEDs disposed surrounding the light guide perimeter and emitting a first color and a second color, and an encapsulant, which abuts the wave guide, surrounds the plurality of light emitting diodes, and matches a refractive index of the wave guide.

The Examiner relies on Tarne to teach a curved surface including the microstructures.

A. Claims 1-3, 5, 7 and 9 Are Not Obvious Over Tung in view of Tokunaga and Tarne

Claims 1-3, 5, 7 and 9 are not obvious over Tung in view of Tokunaga and Tarne because (1) the cited prior art does not teach or suggest all claim limitations; and (2) the cited prior art has not been shown to contain suggestion or motivation in the references themselves or in the knowledge generally available to one of ordinary skill in the art at the time the invention was made, to modify the references or to combine the references teachings.

1. The Cited Prior Art does not Teach or Suggest all Limitations of Claim 1

a. The microstructures in Tung do not define the pattern of the light

The Examiner relies on Tung to teach discrete microstructures which interact with light in the wave guide to scatter the light out of the wave guide in a pattern. Tung discloses a light that is reflected off the microstructures and through the defined precut openings in the wave guide, e.g. the letters I, D, S. (FIG. 1, Col. 3, lines 18-25). Therefore, it is not the microstructures that define the pattern of the scattered light, but rather the precut openings in the wave guide.

b. The LEDs of Tokunaga do not surround the wave guide

The Examiner relies on Tokunaga to teach that the LEDs surround the wave guide. Tokunaga discloses two pairs of LEDs that are positioned in the holes opposing one another on the opposing sides. (FIG. 1). Claim 1 requires the LEDs

surround the wave guide periphery. Tokunaga does not disclose or suggest the LEDs which *surround* the wave guide.

c. Tokunaga does not teach or suggest a refractive index matching encapsulant which surrounds the LEDs and abuts the wave guide

The Examiner relies on Tokunaga to teach an encapsulant which abuts the wave guide, surrounds the LEDs and matches the refractive index of the wave guide. The Examiner contends that the encapsulant is a part of the wave guide which surrounds the LEDs. In fact, the portions of the wave guide, in which the cavities for the LEDs are provided, are an integral part of the wave guide (as the Examiner correctly notes) which cannot *abut* the wave guide because these portions are the wave guide. (FIG. 2). Therefore, a portion of the wave guide of Tokunaga does not amount to an encapsulant as an element which abuts the wave guide as set forth in claim 1.

Additionally to the argument above, Applicants submit the LEDs of Tokunaga are surrounded by cavities filled with air. (FIG. 2). Accordingly, Tokunaga does not disclose or suggest an encapsulant which matches the refractive index of the wave guide.

d. Tarne does not disclose or suggest a curved bottom surface

The Examiner relies on Tarne to teach a curved bottom surface. Tarne discloses a plurality of reflective stepped faces that are fully circumferential. (FIG. 1, 5). The stepped faces are characterized by length and the angle of the step. (Col. 3, lines 19-23). The stepped surfaces are connected to each other in the order of decreased diameters, such that the surface with the smallest diameter is disposed closest to the light emitting surface. Such surface is not a *curved* surface. (FIG. 6). Such surface is a *stepped* surface.

e. The structures in Tarne are not microstructures and are not discrete

As discussed above, the Examiner relies on Tarne to teach a curved surface including discrete microstructures. Tarne teaches a lens with a substantially planar back surface that has a plurality of reflective stepped faces that are circumferential. (FIG. 6). Tarne does not teach or suggest *discrete* microstructures which are

positioned on a *curved* surface. The stepped faces are not "discrete" structures. Therefore, Tarne does not disclose or suggest a *curved* surface which includes *discrete microstructures*. Moreover, either the Tarne discrete microstructures form a "curved" surface, which, accordingly, would lack Appellants claimed microstructures or the Tarne structure includes microstructures but is not curved. In short, Tarne cannot teach both a curved structure and microstructures in one element.

2. No Motivation or Suggestion has been Shown to Modify or Combine Cited References

a. No desirability has been shown to position the light sources surroundingly in Tung

As discussed above, Tung discloses a light that is reflected off the microstructures and through the precut openings in the wave guide, e.g. the letters I, D, S. (FIG. 1). The microstructures are positioned in a generally vertical structure, one on top of another, similar to a column. (FIG. 4) The light shines from underneath of the column and travels upward, reflecting from the microstructures. There is no motivation or suggestion to those skilled in the art to combine teachings of Tung and Tokunaga and position LEDs all around the perimeter of the display. It has not been shown why it is desirable for one skilled in the art to surround the device with the LEDs.

b. Tarne is not analogous art

Tarne is not analogous art since it is not pertinent to the problem with which Applicants were concerned because a person having ordinary skill in the art would not reasonably be expected to solve the problem of creating a predefined light pattern which can be recognized by a human by considering a reference dealing with a lens for an automobile.

c. No desirability has been shown to position the lens of Tarne into Tung

As discussed above, in Tarne, the microstructures are positioned in a generally vertical structure, similar to a column. (FIG. 4) The light shines from the bottom of the column and travels upward, reflecting from the microstructures. There is no clear advantage gained from using a lens of Tarne in Tung. It has not been

shown that why it is desirable for one skilled in art to have positioned the lens in Tung.

In conclusion, Applicants maintain that (1) the cited prior art does not teach or suggest all limitations of claim 1 and (2) no motivation or suggestion to combine the teachings has been presented, or, more importantly, exists in the references. The fact that some pieces of the totality of claim 1 exist separately in the references does not suggest the combination of the elements. Therefore, it is respectfully submitted that the rejection of claim 1 and dependent claims 2-3, 5, 7, and 9 is in error.

Issue 2

Claims 12 and 13 are rejected under 35 U.S.C. §103(a) as being obvious over Gwo-Juh (U.S. Patent No. 6,164,791) in view of Kuwabara (U.S. Patent No. 6,508,564).

The Examiner relies on Gwo-Juh to teach an optical wave comprising: a transparent material formed into a shape having a top surface, an arcuate bottom surface, and at least one side surface in optical communication with the light source; and a plurality of microstructures disposed on the bottom surface, which scatter at least a portion of light injected from the light source, the scattered light forms a pre-selected light output pattern viewable outside the wave guide.

The Examiner relies on Kuwabara to teach a translucent material.

B. Claims 12 and 13 Are Not Obvious Over Gwo-Juh in view of Kuwabara

Claims 12 and 13 are not obvious over Gwo-Juh in view of Kuwabara because (1) the cited prior art does not teach or suggest all claim limitations; and (2) the cited prior art was not shown to contain suggestion or motivation in the references themselves or in the knowledge generally available to one of ordinary skill in the art at the time the invention was made, to modify the references or to combine the references teachings.

1. The cited prior art does not teach or suggest all limitations of Claim 12

a. The scattered light does not form a preselected light pattern viewable outside the wave guide

The Examiner relies on Gwo-Juh to teach that the light injected through the top surface forms a preselected light pattern. Gwo-Juh discloses a backlight with a plurality of diffusing structures positioned on the bottom surface to form a more uniform backlight effect. (Abstract, Col. 3, lines 25-30). Therefore, Gwo-Juh neither teaches nor suggests creating a particularly defined preselected light output patterns which is legible to be recognized or read by a human, e.g. "walk," "don't walk," etc. Gwo-Juh is solely concerned with diffused backlight illumination which, indeed, can be viewed outside the wave guide by a human but only as an evenly distributed, diffused illumination. (A diffused light is a light that is not concentrated or localized. Merriam-Webster's Collegiate Dictionary, 11ed.) By diffusing the light one cannot create a defined preselected light output, e.g. "walk," "don't walk," etc.

2. No motivation or suggestion has been shown to modify or combine references

a. Gwo-Juh is not analogous art

Gwo-Juh is not analogous art since it not pertinent to the problem with which Applicants were concerned because a person having ordinary skill in the art would not reasonably be expected to solve the problem of creating a predefined localized light pattern which can be recognized or read by a human by considering a reference dealing with diffusing the light in an uniform evenly distributed level of illumination.

b. Gwo-Juh teaches away

As discussed above, Gwo-Juh is directed to creating a diffused illumination where the present application is directed to creating a localized illumination. Thus, Gwo-Juh installs diffusing units on the bottom or front surface to *diffuse* light rather than form a predefined pattern which can be recognized or read by a luminary. One, skilled in the art, would be looking to Gwo-Juh to create a light diffuser and not predefined localized light output.

c. No desirability has been shown to look into Gwo-Juh to create a preselected light pattern

The above arguments are equally applicable here. Gwo-Juh solves a problem of creating a more uniform illumination. Applicants describe how to create an illumination of a desirable pattern which can be recognized by a human. One, skilled in the art, would be looking to Gwo-Juh to create a light diffuser. There is no motivation or suggestion in Gwo-Juh for one skilled in the art to modify it to create a predefined light output pattern.

In conclusion, Applicants maintain that (1) the cited prior art does not teach or suggest all limitations of claim 12 and (2) no motivation or suggestion to combine the teachings has been presented, or, more importantly, exists in the references. Therefore, it is respectfully submitted that the rejection of claim 12 and dependent claim 13 is in error.

Issue 3

Claims 16, 18 and 19 are rejected under 35 U.S.C. §103(a) as being obvious over Tarne (U.S. Patent No. 6,443,582) in view of Lea (U.S. Patent Application Pub. No. US 20010038539).

The Examiner relies on Tarne to teach a lighting apparatus including a light emissive wave guide including a curved textured bottom surface, the light emissive wave guide having the perimeter thickness greater than the light emissive wave guide center thickness; a plurality of light producing elements arranged around the perimeter of the light emissive wave guide, the light producing elements producing the light substantially along an axis orthogonally disposed relative to the light emissive wave guide.

The Examiner relies on Lea to teach cladding comprising a surface coating with cladding material.

B. Claims 16, 18 and 19 Are Not Obvious Over Tarne in View of Lea

Claims 16, 18 and 19 are not obvious over Tarne in view of Lea because (1) the cited prior art does not teach or suggest all claim limitations; and (2) the cited prior art was not shown to contain suggestion or motivation in the references

themselves or in the knowledge generally available to one of ordinary skill in the art at the time the invention was made, to modify the references or to combine the references teachings.

1. The cited prior art does not teach or suggest all limitations of Claim 16

a. Tarne does not disclose or suggest a curved bottom surface

The Examiner relies on Tarne to teach a curved bottom surface. As discussed above, Tarne discloses a plurality of reflective stepped faces that are circumferential. The stepped faces each is characterized by length and the angle of the step. The stepped surfaces are connected to each other in the order of decreased diameters, such that the surface with the smallest diameter is disposed closest to the light emitting surface. Such surface is not a *curved* surface. Such surface is a *stepped* surface.

b. Tarne does not disclose or suggest a textured bottom surface

The arguments above are equally applicable here. The stepped faces create a surface containing at best circumferential steps. The stepped faces do not amount to a textured surface as set forth in claim 16 and described in the present application.

c. Lea does not disclose or suggest optical cladding opposed to the curved textured bottom surface

Lea discloses a cladding which covers light extraction features of a light guide of an illumination device to reflect light into the light guide.(Para. 24). However, the cladding is not disposed oppositely to the curved textured bottom surface as Lea lacks the curved textured bottom surface.

2. No motivation or suggestion has been shown to modify or combine cited references

a. Tarne is not analogous art

Tarne is not analogous art since it not pertinent to the problem with which Applicants were concerned because a person having ordinary skill in the art would not reasonably be expected to solve the problem of creating a predefined light pattern which can be recognized by a human by considering a reference dealing with a lens for an automobile.

b. The references were viewed with an impermissible hindsight

Examiner suggests modification of Tarne by providing cladding taught by Lea to improve light efficiency. However, neither Tarne nor Lea discloses or suggests providing cladding opposed to the curved textured bottom surface. At best, the teachings suggest, when combined, to dispose the cladding on the light extraction features as provided in Lea. Applicants submit that the Examiner used an impermissible hindsight when suggesting a combination of Tarne and Lea.

In conclusion, Applicants maintain that (1) the cited prior art does not teach or suggest all limitations of claim 16 and (2) no motivation or suggestion to combine the teachings has been presented, or, more importantly, exists in the references. Therefore, it is respectfully submitted that the rejection of claim 16 and dependent claims 18-19 is in error.

Issue 4

Claim 17 is rejected under 35 U.S.C. §103(a) as being obvious over Tokunaga.

The Examiner relies on Tokunaga to teach a lighting apparatus comprising a light emissive wave guide including a textured surface; a plurality of light producing elements arranged about a periphery of the light emissive wave guide to produce light which interacts with the textured surface and is emitted by the light emissive wave guide; and an encapsulant - waveguide's extensions defining and surrounding the cavities for the LEDs and abutted - being molded in one piece from one material integral part of the same material, the encapsulant matching – being integral and a part of the same material - a refractive index of the light emissive wave guide.

C. Claim 17 Are Not Obvious Over Tokunaga

Claim 17 are not obvious over Tokunaga because (1) the cited prior art does not teach or suggest all claim limitations; and (2) the cited prior art was not shown to contain suggestion or motivation in the reference itself or in the knowledge generally available to one of ordinary skill in the art at the time the invention was made, to modify the reference.

1. The Cited Prior Art does not Teach or Suggest all Limitations of Claim 17

a. Tokunaga does not teach or suggest a refractive index matching encapsulant which surrounds the LEDs and abuts the light guide

The Examiner relies on Tokunaga to teach an encapsulant which abuts the wave guide, surrounds the LEDs and matches the refractive index of the wave guide. As discussed above in relation to Claim 1, the examiner alleges that the encapsulant is a part of the wave guide which surrounds the LEDs. In fact, the portions of the wave guide, in which the cavities for the LEDs are provided, are an integral part of the wave guide (as the Examiner correctly notes) which cannot *abut* the wave guide because these portions are the wave guide. (FIG. 2). Therefore, a portion of the wave guide does not amount to an encapsulant as an element which abuts the wave guide.

Additionally to the argument above, Applicants submit the LEDs of Tokunaga are surrounded by cavities filled with air. (FIG. 2). Accordingly, Tokunaga does not disclose or suggest an encapsulant which matches the refractive index of the wave guide.

b. Encapsulant of Tokunaga is not a functional equivalent of a separate encapsulant

As discussed above, the Examiner points out to a part of the wave guide which surrounds the LEDs as being the encapsulant. The Examiner contends that such encapsulant is a functional equivalent of a separate encapsulant. Applicants submit that such encapsulant is not a functional equivalent of the separate encapsulant because, for one reason, it cannot be constructed of any material other

than a material from which the light guide is constructed, and, for another reason, there is an air gap between the LEDs and the wave guide. (FIG. 2).

2. No motivation or suggestion has been shown to modify the reference

a. No desirability has been shown to make encapsulant separate

No motivation or suggestion has been shown to modify Tokunaga to make an encapsulant a piece separate from the wave guide. To the contrary, the Examiner suggests that it is advantageous to make an encapsulant as one piece for the benefit and advantage of providing a cost effective combination of a wave guide and encapsulant which require minimum number of parts.

b. The reference was viewed with an impermissible hindsight

As discussed above, Examiner relies on Tokunaga to teach that a portion of a wave guide which surrounds the LEDs is an encapsulant. However, nowhere does Tokunaga discloses or suggests providing an index matching encapsulant to reduce reflection losses. Moreover, nowhere does Tokunaga discloses or suggests providing an encapsulant which is separate from the wave guide. Applicants submit that the Examiner used an impermissible hindsight afforded by the limitations set forth in claim 17.

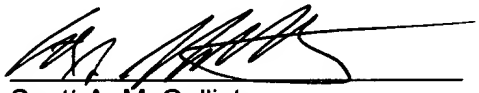
In conclusion, Applicants maintain submit that since (1) the cited prior art does not teach or suggest all limitations of claim 17, and (2) no motivation or suggestion has been shown to modify the reference, the rejection of claim 17 is in error.

IX. CONCLUSION

For all of the reasons discussed above, it is respectfully submitted that the rejections are in error and that Claims **1-9**, **12-14** and **16-19** are in condition for

allowance. For all of the above reasons, Appellants respectfully request the Board of Appeals to reverse the rejections.

Respectfully submitted,



Scott A. McCollister
Registration No. 33,961

FAY, SHARPE, FAGAN, MINNICH & MCKEE, LLP
1100 Superior Avenue – Seventh Floor
Cleveland, Ohio 44114-2579
Telephone: (216) 861-5582

Filed:

N:\GLOZ\200078\mvz0000297V001.doc

CLAIMS APPENDIX

CLAIMS INVOLVED IN THE APPEAL:

1. A lighting apparatus comprising:

a wave guide having a substantially planar light emitting face and discrete microstructures arranged on a curved surface within the wave guide, said microstructures interacting with light in the wave guide to scatter at least a portion of the light out of the wave guide in a pattern, the pattern being determined by a prespecified arrangement of the microstructures;

a plurality of light emitting diodes disposed surroundingly at the wave guide periphery and is coupled to the wave guide and injects light into the wave guide, the plurality of light emitting diodes including:

a first sub-set of light emitting diodes emitting light having a first color, and

a second sub-set of light emitting diodes emitting light having a second color that mixes with the first color in the wave guide to produce a third color; and

an encapsulant surrounding the plurality of light emitting diodes and abutting the wave guide, the encapsulant matching a refractive index of the wave guide.

2. The lighting apparatus as set forth in claim **1**, wherein:

the pattern includes at least one of a letter, a numeral, an arrow, an iconic image of a walking man, an iconic image of a hand, an iconic image of a circle with a slash drawn there through, an iconic image indicating "pedestrian don't walk", and an iconic image indicating "pedestrian walk".

3. The lighting apparatus as set forth in claim **1**, wherein the pattern further comprises:

light scattered at wide angles, said light scattered into wide angles by the microstructures, said light being viewable at a wide range of viewing angles.

4. The lighting apparatus as set forth in claim **1**, further comprising:

a cladding comprising one of a surface coating and a cladding material, said cladding being disposed on the surface on which the microstructures are disposed, said cladding cooperating with the microstructures to effectuate the light scattering.

5. The lighting apparatus as set forth in claim **1**, wherein the wave guide further includes:

a tinting whereby the scattered light has a pre-selected color.

6. The lighting apparatus as set forth in claim **1**, wherein:

the surface on which the microstructures are arranged has a pre-selected curvature.

7. The lighting apparatus as set forth in claim **1**, wherein:

the wave guide defines a planar region; and

the plurality of light emitting diodes is arranged around at least a portion of a perimeter of the planar region and injects light into the planar region of the wave guide.

8. The lighting apparatus as set forth in claim **7**, wherein:

at least a portion of the surface on which the microstructures are arranged is tilted with respect to the plane of the planar region such that the tilt cooperates with the microstructures and the plurality of light emitting diodes to effectuate the scattering of the light in the pre-determined pattern.

9. The lighting apparatus as set forth in claim **1**, further comprising:

a refractive index-matching material disposed at least between the plurality of light emitting diodes and the wave guide.

10-11. (Cancelled)

12. An optical wave guide for use in conjunction with an associated light source, the optical wave guide comprising:

a translucent material formed into a shape having a top surface, an arcuate bottom surface, and at least one side surface in optical communication with the associated light source; and

a plurality of microstructures disposed selectively about the bottom surface, said plurality of microstructures cooperating with the bottom surface to scatter at least a portion of light injected from the associated light source, the scattered light exiting the wave guide through the top surface, wherein the scattered light forms a pre-selected light output pattern viewable outside the wave guide.

13. The optical wave guide as set forth in claim **12**, wherein the plurality of microstructures includes a surface roughness or texture formed into the bottom surface.

14. The optical wave guide as set forth in claim **12**, further comprising:

a cladding material disposed on the outside of the bottom surface that cooperates with the plurality of microstructures to effectuate the light scattering.

15. (Cancelled)

16. A lighting apparatus including:

a light emissive wave guide including:

a substantially planar light emissive face, and

a curved textured bottom surface, the light emissive wave guide defining a center and a perimeter, wherein a thickness of the light emissive wave guide at the perimeter is greater than a thickness of the light emissive wave guide at the center;

an optical cladding opposed to said curved textured bottom surface, and

a plurality of light producing elements arranged around the perimeter of the light emissive wave guide, the light producing elements producing the light substantially along an axis orthogonally disposed relative to the light emissive wave guide, wherein the light interacting with the textured surface is emitted from the light emissive face.

17. A lighting apparatus comprising:

a light emissive wave guide including a textured surface;

a plurality of light producing elements arranged about a periphery of the light emissive wave guide to produce light which interacts with the textured surface and is emitted by the light emissive wave guide; and

an encapsulant surrounding the plurality of light producing elements and abutting the light emissive wave guide, the encapsulant matching a refractive index of the light emissive wave guide.

18. The lighting apparatus as set forth in claim **16**, wherein the textured surface forms a symbol.

19. The lighting apparatus as set forth in claim **16**, wherein the textured surface comprises a plurality of microstructures arranged in a pattern on an interior side of the light emissive wave guide.